

**WHAT IS CLAIMED IS:**

1. A resin composition for manufacturing optical fiber ribbon comprising

a) photopolymerizable urethane acrylate oligomer <sup>obtained from</sup> containing polydimethylsiloxane;

b) monomer;

c) photoinitiator;

d) leveling/defoaming agent; and

e) antioxidant.

Sub A2 2. A resin composition for manufacturing optical fiber ribbon according to claim 1, wherein the photopolymerizable urethane acrylate oligomer containing polydimethylsiloxane is synthesized with a photopolymerizable urethane acrylate oligomer composition comprising i ) polyol compound containing polydimethylsiloxane structure, ii ) polyol copolymer, iii ) polyisocyanate, iv ) acrylate alcohol, v ) urethane reaction catalyst, and vi ) polymerization initiator.

Sub B4 3. A resin composition for manufacturing optical fiber ribbon according to claim 2, wherein the polyol compound containing polydimethylsiloxane has a molecular weight between 100 and 10,000.

Sub A3 4. A resin composition for manufacturing optical fiber ribbon according to claim 2, wherein the polyol compound containing polydimethylsiloxane is selected from the group consisting of Hsi 2111, 1,4-bis(hydroxydimethyl)benzene, 1,3-bis(hydrobutyl)tetramethyldisiloxane, 1,4-

7  
bis(hydropropyl)tetramethyldisiloxane, diphenylsilanediol, and a mixture thereof.

5 5. A resin composition for manufacturing optical fiber ribbon according to claim 2, wherein the polyol compound containing polydimethylsiloxane is used in an amount of 5 to 25 weight% of the photopolymerizable urethane acrylate oligomer composition.

Sub A4  
10 6. A resin composition for manufacturing optical fiber ribbon according to claim 2, wherein the polyol copolymer has a molecular weight of 100 to 10,000, comprises a repeat unit of  $-\text{CH}_2\text{CH}_2\text{O}-$  or  $-\text{CH}_2\text{CH}(\text{CH}_2\text{CH}_3)\text{O}-$ , is selected from the group consisting of polyester polyol, polyether polyol, polycarbonate polyol, polycaprolactone polyol, tetrahydrofuran propyleneoxide ring opening copolymer, ethylene glycol, propylene glycol, 1,4-butanediol, 1,5-pentanediol, 1,6-hexanediol, neopentyl glycol, 1,4-cyclohexane dimethanol, bisphenol A, bisphenol F type diol, and a mixture thereof, and comprises 5 to 30 weight% of the photopolymerizable urethane acrylate oligomer composition.

15 Sub B7  
7. A resin composition for manufacturing optical fiber ribbon according to claim 2, wherein the polyisocyanate is selected from the group consisting of 2,4-tolylenediisocyanate, 2,6-tolylenediisocyanate, 1,3-xylenediisocyanate, 1,4-xylenediisocyanate, 1,5-naphthalene diisocyanate, 1,6-hexanediisocyanate, and isophorone diisocyanate, and is used in an amount of 20 to 40 weight% of the photopolymerizable urethane acrylate oligomer composition.

20 8. A resin composition for manufacturing optical fiber ribbon according to claim 2, wherein the acrylate alcohol is selected from the group consisting of 2-hydroxyethyl methacrylate, 2-hydroxypropyl methacrylate, 2-hydroxybutyl methacrylate, 2-hydroxyethyl acrylate, 2-hydroxypropyl acrylate, 2-hydroxy-3-

Sub B7  
Cont.

phenyloxypropyl methacrylate, 4-hydroxybutyl acrylate, neopentylglycol monomethacrylate, 4-hydroxycyclohexyl methacrylate, 1,6-hexanediol monomethacrylate, pentaerythritolpentamethacrylate, dipentaerythritolpentamethacrylate, and a mixture thereof, and comprises 20 to 35 weight% of the photopolymerizable urethane acrylate oligomer composition.

9. A resin composition for manufacturing optical fiber ribbon according to claim 2, wherein the urethane reaction catalyst is selected from the group consisting of copper naphthenate, cobalt naphthate, zinc naphthate, n-butyltinlaurate, triethylamine, 2-methyltriethylenediamide, and a mixture thereof, and comprises 0.01 to 1 weight% of the photopolymerizable urethane acrylate oligomer composition.

10. A resin composition for manufacturing optical fiber ribbon according to claim 2, wherein the polymerization initiator is selected from the group consisting of hydroquinone, hydroquinone monomethylether, para-benzoquinone, phenothiazine, and a mixture thereof, and comprises 0.01 to 1 weight% of the photopolymerizable urethane acrylate oligomer composition.

11. A resin composition for manufacturing optical fiber ribbon according to claim 1, wherein the monomer is selected from the group consisting of phenoxyethylacrylate, phenoxydiethylene glycol acrylate, phenoxytetraethylene glycol acrylate, phenoxyhexaethylene glycol acrylate, isobornyl acrylate, isobornyl methacrylate, N-vinylpyrrolidone, bisphenol ethoxylate diacrylate, ethoxylate phenol monoacrylate, polyethylene glycol 200 diacrylate, tripropylene glycol diacrylate, triethylpropane triacrylate, polyethyleneglycol diacrylate, ethylene oxide added type triethylpropane triacrylate, pentaerythritol

AS  
(2)

tetraacrylate, 1,4-butanediol diacrylate, 1,6-hexanediol diacrylate, ethoxylated pentaerythritol tetraacrylate, 2-phenoxyethyl acrylate, ethoxylated bisphenol A diacrylate, and a mixture thereof, and comprises 15 to 50 weight% of the resin composition for manufacturing optical fiber ribbon.

5           12. A resin composition for manufacturing optical fiber ribbon according to claim 1, wherein the photoinitiator is selected from the group consisting of Irgacure #184, Irgacure #907, Irgacure #500, Irgacure #651, Darocure #1173, Darocure #116, CGI #1800, and CGI #1700, and comprises 3 to 15 weight% of the resin composition for manufacturing optical fiber ribbon.

10           13. A resin composition for manufacturing optical fiber ribbon according to claim 1, wherein the leveling/defoaming agent is selected from the group consisting of BYK #371, BYK #353, BYK #356, BYK #359, BYK #361, BYK #067, BYK #141, Tego Rad #2200, Tego Rad #2500, Tego Glide #410, Tego Glide #435, and Tego Glide #453, and comprises 0.1 to 5 weight% of the resin composition for manufacturing optical fiber ribbon.

15           14. A resin composition for manufacturing optical fiber ribbon according to claim 1, wherein the antioxidant is selected from the group consisting of Irganox 1010, Irganox 1035, Irganox 1076, and a mixture thereof, and comprises 0.1 to 5 weight% of the resin composition for manufacturing optical fiber ribbon.

20           15. A preparation method of resin for manufacturing optical fiber ribbon

95  
1 mel

in which a resin composition for manufacturing the optical fiber ribbon of claim 1 is used.

16. A preparation method of resin for manufacturing optical fiber according to claim 15, wherein a resin for manufacturing optical fiber ribbon  
5 having 23 dyne/cm<sup>2</sup> or less surface tension is prepared without the talc process for providing the surface slipping characteristics.

17. A resin for manufacturing optical fiber ribbon manufactured by claim 15.

18. A resin for manufacturing optical fiber ribbon according to claim 17,  
10 wherein surface tension of the resin for manufacturing optical fiber ribbon is 23 dyne/cm<sup>2</sup> or less.

19. A resin for manufacturing optical fiber ribbon according to claim 17,  
wherein the resin for manufacturing optical fiber ribbon has a shrinkage of 7.2%  
or less when measured by an ASTM (American Society for Testing and  
15 Materials) D-792 method.

002407-1400  
002407-1400